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c/o  
EW

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



In re U.S. Patent No. 7,054,392 )  
CHAPPAZ )  
Issued: MAY 30, 2006 )  
For: PROCESS AND DEVICE FOR )  
ESTIMATING THE SUCCESSIVE VALUES )  
OF DIGITAL SYMBOLS IN PARTICULAR )  
FOR THE EQUALIZATION OF AN )  
INFORMATION TRANSMISSION CHANNEL )  
IN MOBILE TELEPHONY )  
\_\_\_\_\_  
)  
) Attorney Docket No. 54291

REQUEST FOR CORRECTED CERTIFICATE OF CORRECTION

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

*Certificate  
of Correction  
MAY 30 2007*

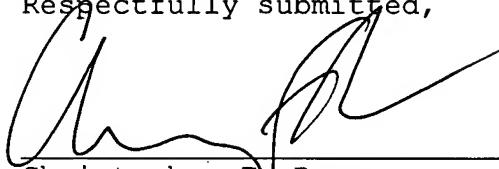
The Original Certificate of Correction has been received and reviewed for accuracy. The Original Certificate of Correction is incorrect because the title of the patent was not corrected. However, the title of the patent is correct in the Certificate of Correction Form PTO-1050 that the Patentee provided to the Patent Office with it's request of November 14, 2000. Copies of both the Original Certificate of Correction and the Form PTO-1050 sent with Patentee's original request are enclosed.

Since this error is believed to be the error of the Patent Office, the new Certificate of Correction should be

In re Patent of  
**CHAPPAZ**  
Patent No. 7,054,392  
Issued: **MAY 30, 2006**

printed at no expense to the Patentee. No new matter is added by this correction.

Respectfully submitted,

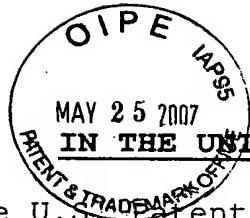


Christopher F. Regan  
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: COMMISSIONER OF PATENTS AND TRADEMARKS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450, on this 22<sup>nd</sup> day of May, 2007.





**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re U.S. Patent No. US 7,054,392 B2 )  
**CHAPPAZ** )  
Issued: **MAY 30, 2006** )  
For: **PROCESS AND DEVICE FOR ESTIMATING** )  
    **THE SUCCESSIVE VALUES OF DIGITAL** )  
    **SYMBOLS OF AN INFORMATION** )  
    **TRANSMISSION CHANNEL** )  
\_\_\_\_\_  
)

**REQUEST FOR CERTIFICATE OF CORRECTION OF**  
**OFFICE MISTAKE UNDER RULE 1.322(a)**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of Rule 1.322(a) of the Rules of Practice, the Patent Office is respectfully requested to correct matters in the above-identified patent in accordance with the Certificate of Correction Form PTO-1050 attached hereto.

The Patent Office is requested to issue a Certificate of Correction on the above-referenced Patent Document, and to place such a Certificate of Correction in the file, so that such will appear on any copies of the patent, which are ordered in the future.

The corrections being made are of consequence to provide the proper drawings and the proper recitation in the specification and claims. Moreover, since these errors are believed to be errors of the Patent Office, such changes should be made at no expense to the Patentee. No new matter

In re Patent of  
**CHAPPAZ**  
Patent No. US 7,054,392 B2  
Issued: MAY 30, 2006

is added by these corrections.

Respectfully submitted,



---

Christopher F. Regan  
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UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO.	:	US 7,054,392 B2
DATED	:	May 30, 2006
INVENTOR(S)	:	David Chappaz

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below

Cover Page (54)

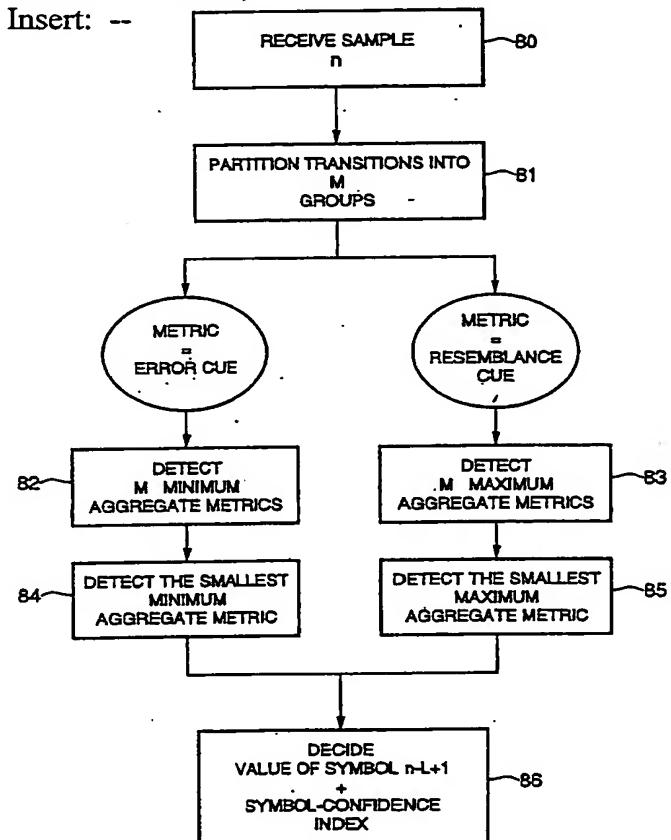
Delete: "Process and Device for Estimating the Successive values .....Telephony"

Insert: -- Process and Device for Estimating the Successive Values of Digital Symbols of An Information Transmission Channel --

Cover Page –  
Published Drawing

Delete: Current Published Drawing

Insert: --



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PATENT NO. US 7,054,392 B2

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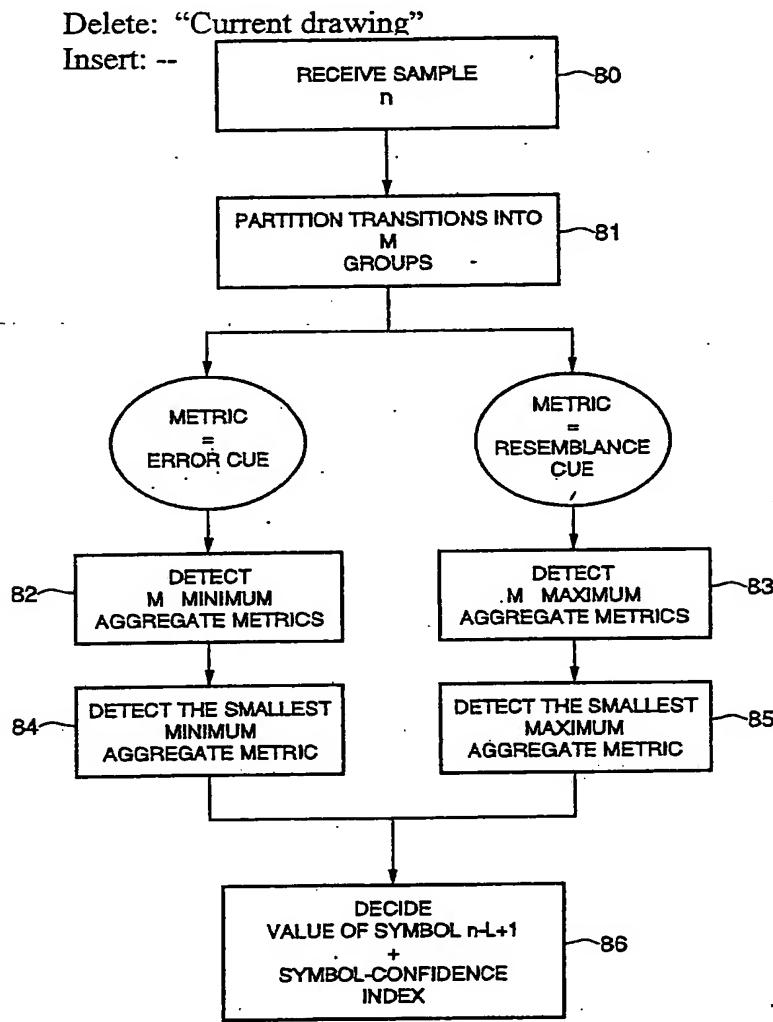
CERTIFICATE OF CORRECTION

PATENT NO.	:	US 7, 054,392 B2
DATED	:	May 30, 2006
INVENTOR(S)	:	David Chappaz

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Sheet 8 of 31

FIG.8



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PATENT NO. US 7,054,392 B2

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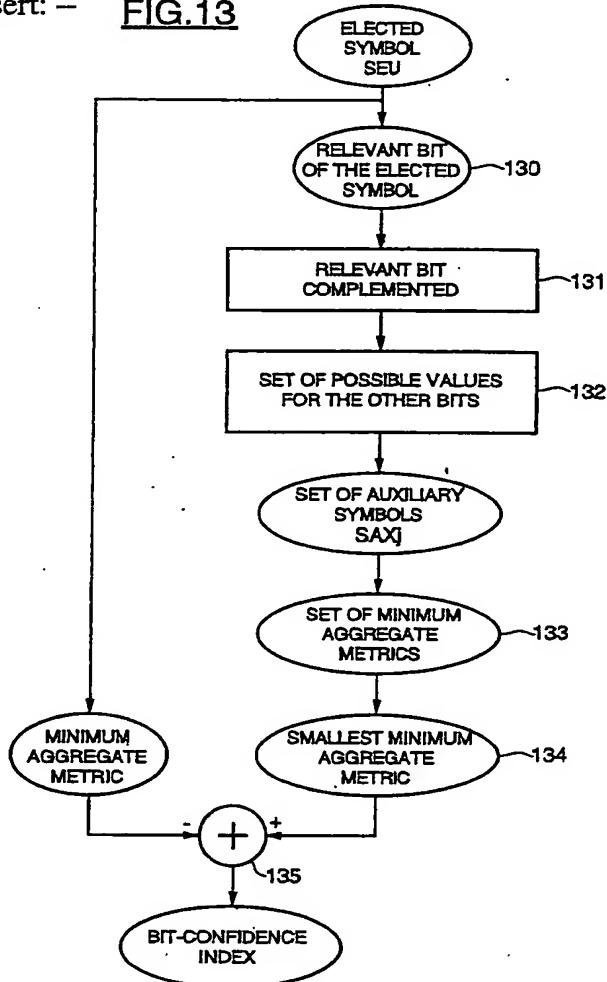
PATENT NO.	:	US 7,054,392 B2
DATED	:	May 30, 2006
INVENTOR(S)	:	David Chappaz

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Sheet 13 of 31

Delete: "Current drawing"

Insert: — FIG.13



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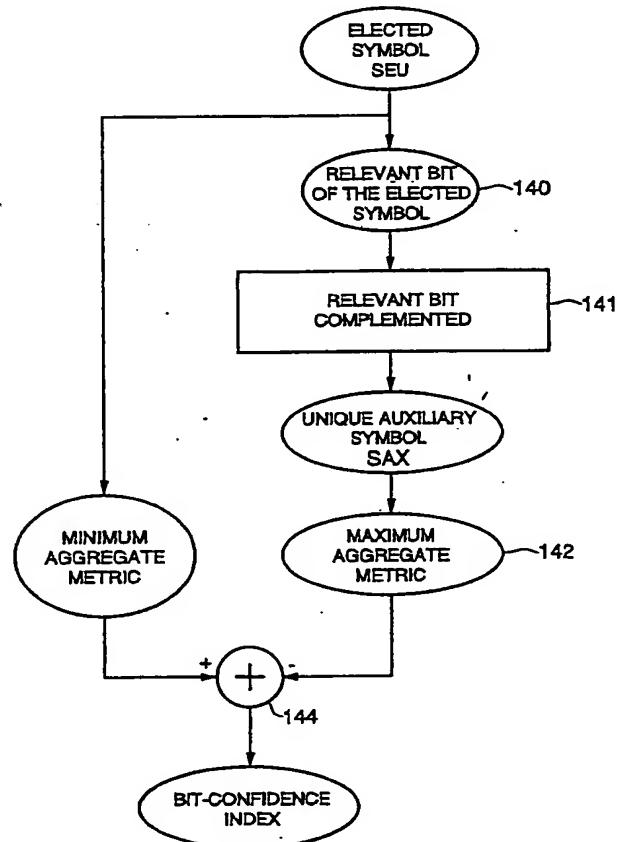
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FIG.14



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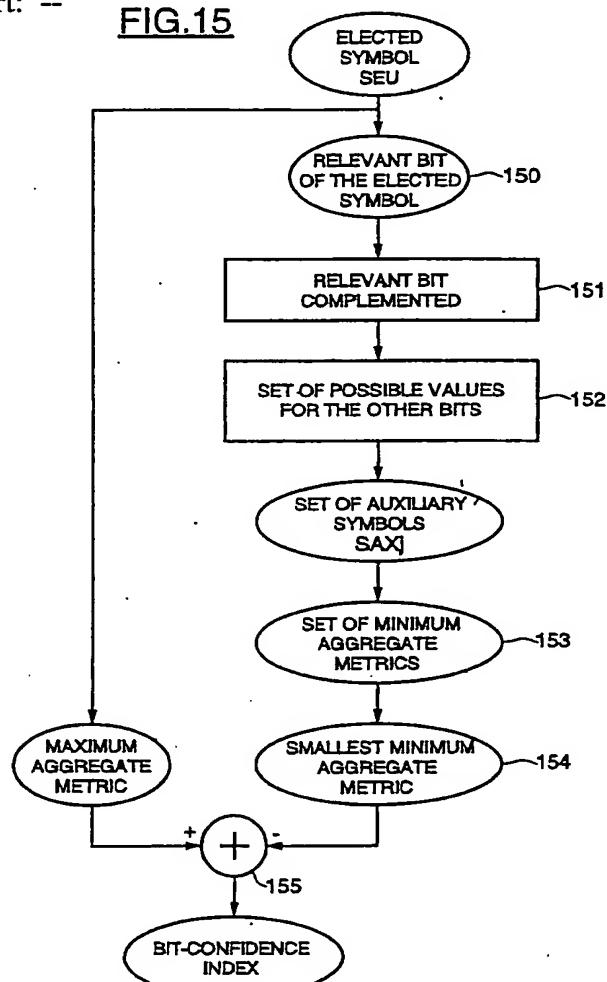
PATENT NO.	:	US 7,054,392 B2
DATED	:	May 30, 2006
INVENTOR(S)	:	David Chappaz

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Sheet 15 of 31

Delete: "Current drawing"  
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FIG.15



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PATENT NO. US 7,054,392 B2

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DATED	:	May 30, 2006
INVENTOR(S)	:	David Chappaz

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Column 1, Line 1

Delete: "Process and Device for Estimating the Successive values .....Telephony"

Insert: -- Process and Device for Estimating the Successive Values of Digital Symbols of An Information Transmission Channel --

Column 13, Line 24

Delete: "resemblance, information"  
Insert: -- resemblance information --

Column 14, Line 17

Delete: "ETGN"  
Insert: -- ETG<sub>n</sub> --

Column 15, Line 54

Delete: "SELL"  
Insert: -- SEL1 --

Column 15, Line 56

Delete: "MO"  
Insert: -- M0 --

Column 15, Line 67

Delete: "SELL"  
Insert: -- SEL1 --

Column 30, Line 64

Delete: "decision by"  
Insert: -- decision, by --

Column 31, Line 38

Delete: "45"  
Insert: -- 46 --

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PATENT NO. US 7,054,392 B2

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CERTIFICATE OF CORRECTION

PATENT NO. : 7,054,392 B2  
APPLICATION NO. : 10/006995  
DATED : May 30, 2006  
INVENTOR(S) : Chappaz

Page 1 of 6

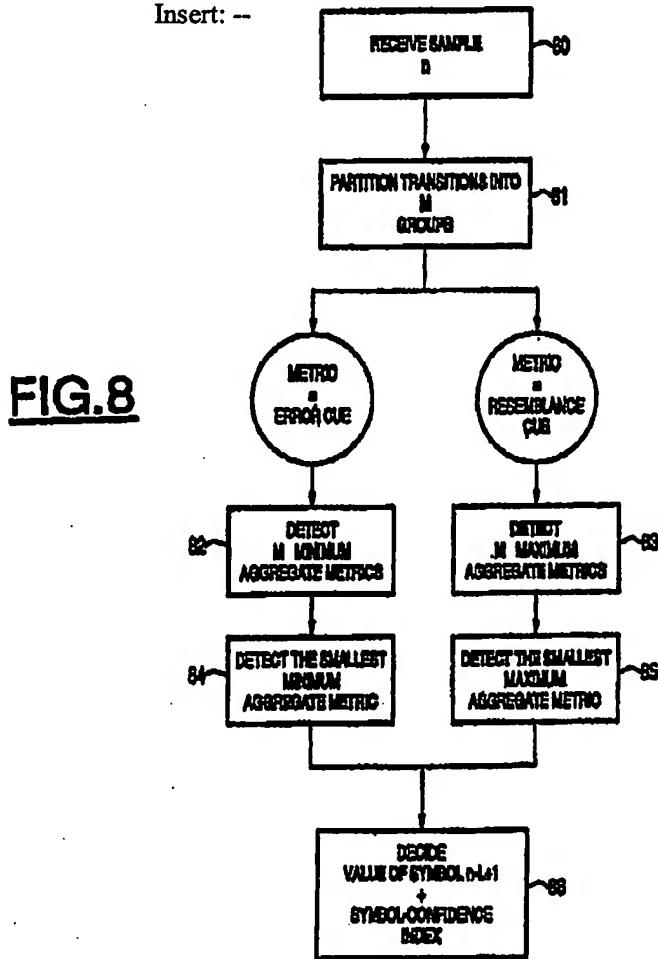
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Delete Title page illustrating a figure, and substitute therefor, new Title page illustrating a figure. (attached)

Sheet 8 of 31

Delete: "Current drawing"

Insert: --



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PATENT NO. : 7,054,392 B2  
APPLICATION NO. : 10/006995  
DATED : May 30, 2006  
INVENTOR(S) : Chappaz

Page 2 of 6

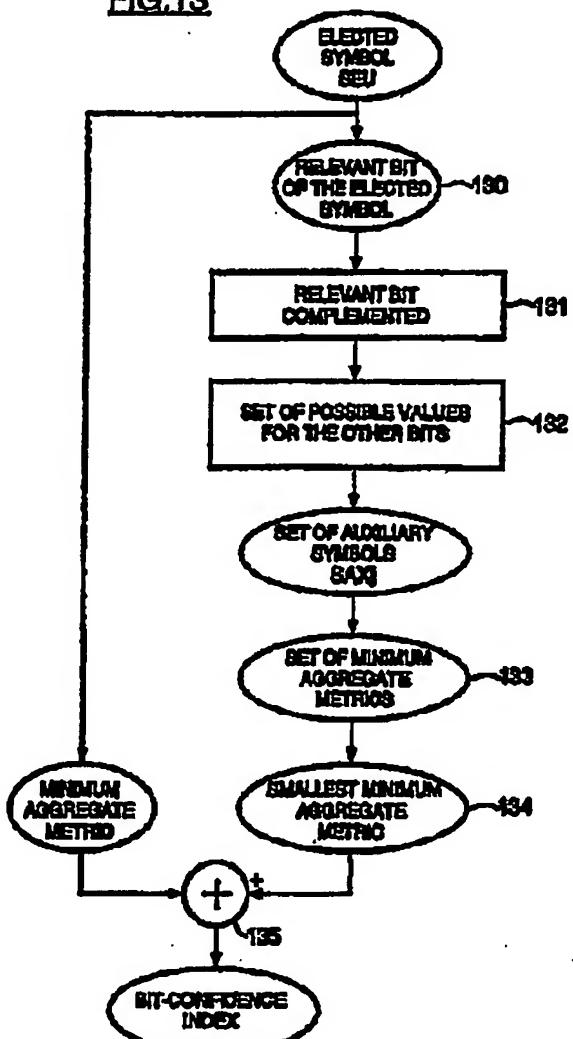
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Sheet 13 of 31

Delete: "Current drawing"

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FIG.13



UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,054,392 B2  
APPLICATION NO. : 10/006995  
DATED : May 30, 2006  
INVENTOR(S) : Chappaz

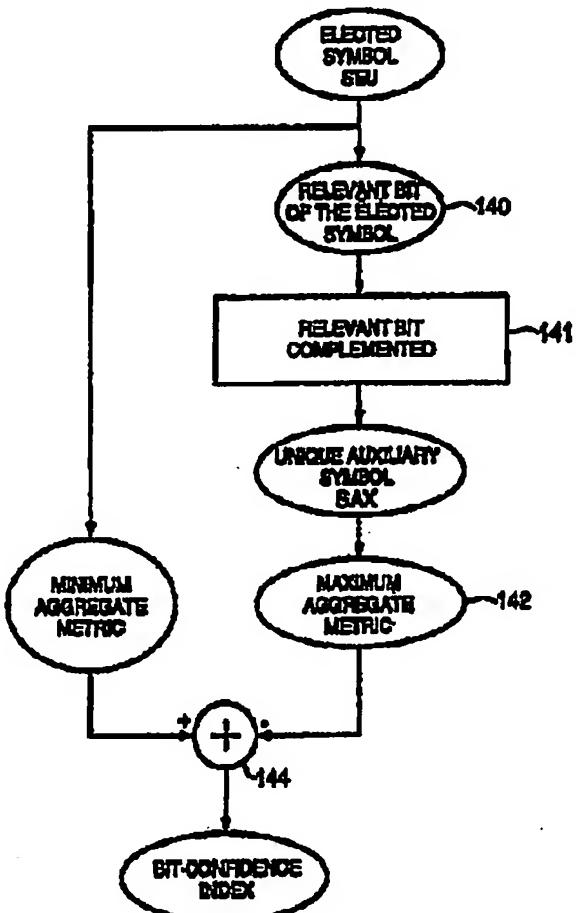
Page 3 of 6

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Sheet 14 of 31

Delete: "Current drawing"  
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FIG. 14



UNITED STATES PATENT AND TRADEMARK OFFICE  
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PATENT NO. : 7,054,392 B2  
APPLICATION NO. : 10/006995  
DATED : May 30, 2006  
INVENTOR(S) : Chappaz

Page 4 of 6

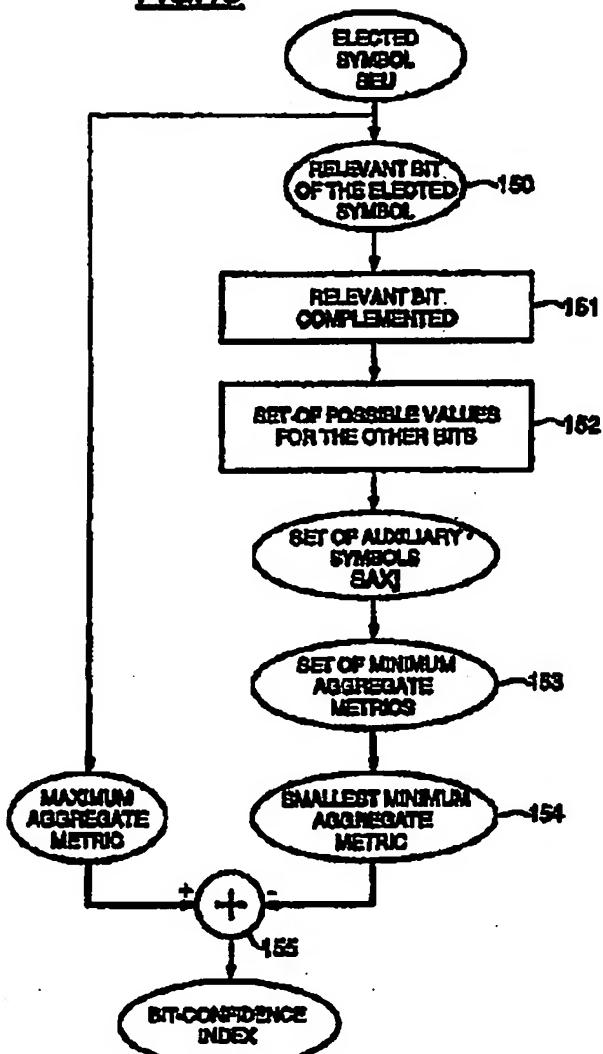
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Sheet 15 of 31

Delete: "Current drawing"

Insert: --

FIG.15



UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION

PATENT NO. : 7,054,392 B2  
APPLICATION NO. : 10/006995  
DATED : May 30, 2006  
INVENTOR(S) : Chappaz

Page 5 of 6

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 13, Line 24	Delete: "resemblance, information" Insert: -- resemblance information --
Column 14, Line 17	Delete: "ETGN" Insert: -- ETG <sub>n</sub> --
Column 15, Line 54	Delete: "SELL" Insert: -- SEL1 --
Column 15, Line 56	Delete "MO" Insert: -- M0 --
Column 15, Line 67	Delete: "SELL" Insert: -- SEL1 --
Column 30, Line 64	Delete: "decision by" Insert: -- decision, by --
Column 31, Line 38	Delete: "45" Insert: -- 46 --

Signed and Sealed this

Thirteenth Day of March, 2007



JON W. DUDAS  
Director of the United States Patent and Trademark Office

(12) United States Patent  
Chappaz(10) Patent No.: US 7,054,392 B2  
(45) Date of Patent: May 30, 2006

(54) PROCESS AND DEVICE FOR ESTIMATING THE SUCCESSIVE VALUES OF DIGITAL SYMBOLS, IN PARTICULAR FOR THE EQUALIZATION OF AN INFORMATION TRANSMISSION CHANNEL IN MOBILE TELEPHONY

(75) Inventor: David Chappaz, Saint Julian en Genevois (FR)

(73) Assignee: STMicroelectronics N.V., Amsterdam (NL)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 792 days.

(21) Appl. No.: 10/006,995

(22) Filed: Dec. 3, 2001

(65) Prior Publication Data

US 2002/0126775 A1 Sep. 12, 2002

(30) Foreign Application Priority Data

Dec. 4, 2000 (EP) 00125395  
May 29, 2001 (EP) 01112095(51) Int. Cl.  
H03D 1/00 (2006.01)  
H04L 27/06 (2006.01)(52) U.S. Cl. 375/341; 375/262; 375/265;  
714/792; 714/793; 714/796(58) Field of Classification Search 375/229-233,  
375/252, 265, 285, 227, 341, 346, 350; 708/300,  
708/319-323; 714/792, 795, 796

See application file for complete search history.

## (56) References Cited

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Mueller et al., "Reduced-State Soft-Output Trellis-Equalization Incorporating Soft Feedback", Global Telecommunications Conference (Globecom), US, New York, IEEE, Nov. 18, 1996, pp. 95-100, XP000742133.

\* cited by examiner

Primary Examiner—Jean-B. Corriehus

(74) Attorney, Agent, or Firm—Lisa K. Jorgenson; Allem, Dyer, Doppeit, Milbrath &amp; Gilchrist, P.A.

## (37) ABSTRACT

A process for estimating successive values of digital symbols which can each take  $M$  different possible values, on the basis of the successive values of digital samples each of which results from the combination of at most  $L$  successive symbols. This process includes a stage by stage progression through a trellis of the Viterbi type with  $M^k$  states, with  $k$  being less than or equal to  $L-1$ . All the stages are respectively provided with aggregate metrics.

60 Claims, 31 Drawing Sheets

